A STRATEGY FOR CHANGE

BRITISH COLUMBIA SHIPBUILDING & REPAIR INDUSTRY

SHIPBUILDING ACTION GROUP
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Province of British Columbia

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July 11, 1990

Honourable Stanley B. Hagen
Minister of Regional and Economic Development
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Dear Minister:

It is my pleasure to present to you the Report of the Shipbuilding Action Group, entitled "A Strategy for Change".

The shipbuilding world has radically changed in the last several decades. Offshore subsidies are high, wage rates are often low and new technological innovation constant. As presently structured, our industry can no longer compete internationally. (We remain the most efficient in Canada.) The Polar 8 cancellation was the catalyst that brought us together to face this reality.

This is a consensus document signed by all members of the Action Group who participated in its development. This was no mean feat - compromises had to be made on all sides. This translates into reduced yard capacity and fewer jobs than in the halcyon days of the past. But it also means greater job security for those employees remaining, money for re-investment in new technologies and reasonable profits for the shipbuilding companies.

This is also a challenge document. The Industry has accepted the challenge from government to restructure and now puts the ball back into the government's court to respond (giving both federal and provincial levels fixed timelines to do so).

Finally, it is an action document, because that is what is now required. Some of the recommendations are contentious and implementation will require further work and commitment from both levels of government, employers and labour. Government must move quickly, but must exercise care to ensure fairness and opportunity to all. No government action can assist one party at the expense of another. Co-ordinated action is key, as this Report is a long term strategy for survival not a band-aid quick fix.

Many people helped with the Report, including Ken Roueche, Greg Koyl and Ardath Paxton Mann. We also wish to extend our appreciation to our consultant, Peter Hatfield. Also, Mr. James Matkin, President of the British Columbia Business Council and Mr. Ken Georgetti, President of the British Columbia Federation of Labour kindly offered their assistance and advice.

I am confident that the new industry alliance formed among unions, companies and suppliers will create new opportunities for the shipbuilding industry in British Columbia.

Yours sincerely,

Robert S. Plecas
Chairman

BRITISH COLUMBIA

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

1.0 INTRODUCTION

1.1 Background to the Report 1
1.2 Shipbuilding Action Group 1
1.3 Federal Government Shipbuilding Policy 2

2.0 THE POLAR 8 DECISION

2.1 Background 3
2.2 The Sale of VPSI to Shieldings Incorporated 4
2.3 The Bridging Contract 4
2.4 Immediate Impact of the Cancellation of Polar 8 5

3.0 THE INDUSTRY TODAY

3.1 Introduction 7
3.2 Perceptions of the Industry 7
3.3 Profile of British Columbia Shipbuilding and Ship Repair Industry 7
3.4 Current Industry Capacity 12
3.5 Current Industry Productivity and Competitiveness 12
3.5.1 Canada 12
3.5.2 International 13
3.5.3 Shipyard Unions 13
3.6 Government Controlled Yards 14
3.6.1 Deas Dock Refit Complex 14
3.6.2 Esquimalt Graving Dock 16
3.6.3 Ship Repair Unit Pacific 16
3.6.4 Canadian Coast Guard Victoria Base 17
3.6.5 Department of Fisheries and Oceans, Patricia Bay and Prince Rupert Bases 18
3.7 Related Businesses 18
3.7.1 Equipment Manufacturers 18
3.7.2 Technical Consultants and Support Services 19
3.7.3 Subcontractors 19

4.0 MARKET FORECAST

4.1 World Market Trends 20
4.2 British Columbia Market Trends 21
4.2.1 Ferries 21
4.2.2 Tugs and Barges 21
4.2.3 Fishing Vessels 21
4.2.4 Arctic Vessels and Structures 22
4.2.5 Canadian Coast Guard 22

4.2.6 Department of Fisheries and Oceans 23
4.2.7 Department of National Defence 23
4.2.8 Ship Repair 23
4.2.9 Future Scenarios 23

5.0 INDUSTRY PRODUCTIVITY

5.1 The Productivity Challenge 30
5.1.1 Process Lane 30
5.1.2 Zone Outfitting 30
5.1.3 Statistical Process Control 31
5.1.4 Automation and Technology 31
5.2 The Obstacles to Change 31
5.2.1 Management 31
5.2.2 Labour 31
5.2.3 Design Organization 32
5.2.4 Capital Investment 32
5.3 Technological Change — A Comparative Study 32

6.0 SUMMARY AND RECOMMENDATIONS

6.1 Background 33
6.2 Recommendations 35
6.2.1 Federal Government Initiatives 35
6.2.2 Provincial Government Initiatives 39
6.2.3 Industry and Labour Initiatives 40

TABLE 1. British Columbia Shipyards 9
TABLE 2. Major British Columbia Shipyards 10
TABLE 3. Shipyard Union Jurisdictions 15
TABLE 4. Base Scenario 25
TABLE 5. Pessimistic Scenario 26
TABLE 6. Optimistic Scenario 27
FIGURE 1. Locations of Major Shipyards 11
FIGURE 2. Forecast of Total New Construction and Ship Repair Employment (Person-Years) 28
FIGURE 3. World Shipbuilding Demand 29

Executive Summary

On February 20, 1990, the federal government cancelled the Polar 8 icebreaker project. The immediate impact was the loss of 2200 person-years of shipyard employment in British Columbia. Polar 8, however, was also an opportunity to apply a build strategy, assisted by international expertise, which would have allowed the industry to develop and prosper well beyond Polar 8. Polar 8 would also have provided important technological spinoffs for naval architects, marine engineers and manufacturers of steering, propulsion, controls, safety/survival equipment and many other products.

On February 23, 1990, in response to the Polar 8 decision, British Columbia Minister of Regional and Economic Development, the Honourable Stanley B. Hagen, announced the establishment of the Shipbuilding Action Group, to examine ways to revitalize the British Columbia shipbuilding and ship repair industry.

On March 2, 1990, Ministry staff met with shipyard industry representatives and again on March 5, 1990, with shipyard union officials to select representatives to form the Shipbuilding Action Group.

On March 13, 1990, Minister Hagen and representatives from industry and labour met with federal Ministers to present a preliminary impact of the Polar 8 decision and to urge federal Ministers to review the decision.

On March 15, 1990, the Shipbuilding Action Group held its inaugural meeting and agreed upon a course of action that would yield a strategy that would see British Columbia with a viable, competitive shipbuilding and repair industry for the 21st century.

On June 22, 1990, with assistance from government and consultants, and in consultation with various shipyard union officials, the Action Group finalized the 17 recommendations contained in this report. The final report was presented to the Minister of Regional and Economic Development on Thursday, July 12, 1990. The implementation of these recommendations will require active support from the two levels of government as well as shipyard management and labour.

In terms of government support for the recommendations, virtually all company and labour officials expressed the concern that government must be extremely careful to proceed with a coherent, coordinated plan to ensure that by helping one company the assistance does not adversely affect others.

The Action Group has concluded that industry capacity, at the 11 major yards, should be reduced to approximately 1800 person-years. This is a level that is sustainable in the long term and reflects the base case scenario outlined in this report. In

order to affect these reductions and to ensure that British Columbia has a viable shipbuilding and repair industry, the Action Group recommends:

1. That Industry, Science and Technology Canada implement a shipyard assistance program available to all British Columbia shipyards.
2. That Western Diversification funds be used to assist those shipyard firms who wish to diversify.
3. That Labour Canada assist older workers to take early retirement.
4. That the Department of Supply and Services ensures that British Columbia industry has improved access to marine sector projects. That the Coast Guard and Department of Fisheries and Oceans ship repair bases be limited to undertaking running repairs on their vessels and that the Ship Repair Unit Pacific be limited to maintaining combat vessels.
5. That Public Works Canada cancel any plans for privatization of the Esquimalt Graving Dock.
6. That Canada closely monitor the Free Trade Agreement to ensure the U.S. prohibition on vessel imports does not put British Columbia shipyards at an unfair disadvantage.
7. That Canada make application for accelerated elimination, under the Free Trade Agreement, of the tariffs on the repair and maintenance of vessels.
8. That Canada maintain 25 percent tariff protection, where currently applicable, and expand protection to include fishing vessels over 100 feet.
9. That vessel compliance regulations not be waived on foreign built vessels.
10. That the federal government reconsider the Polar 8 decision, design a program of assistance for new commercial vessel development, appoint an independent panel to review the federal marine procurement system and also appoint a panel to review Canadian commercial ship standards.
11. That Ministers Campbell, Bouchard and Collins ensure a coordinated federal response to the Action Group's recommendations and facilitate communication with the industry.
12. That all British Columbia Ferry Corporation procurement be offered for competitive bid with preferential consideration given to industrial and employment benefits available from sources in British Columbia. That the Corporation's Deas Dock facility be limited to undertaking running repairs and that the Corporation, in conjunction with the British Columbia Council of Marine Industries, review procurement policy to ensure that all procurement procedures are open and effective.

13. That the Ministry of Regional and Economic Development continue to assist industry, labour and the various federal departments and agencies in dealing with issues arising from this report. That the Ministry of Regional and Economic Development assist the industry to establish the British Columbia Council of Marine Industries.

14. That Ministers Hagen, Johnston and Strachan ensure a coordinated provincial response to the Action Group's recommendations and facilitate communication with the industry.

15. That a British Columbia Council of Marine Industries be established with membership open to all shipyard unions and allied industries.

16. That existing union seniority lists be recognized and combined within individual unions where union trades are complementary and that collective agreements allow for implementation of technological changes. That a Federation of British Columbia Shipyard Unions be established to form consistent policy across the industry with respect to productivity, technological change and other issues.

17. That within 30 days federal Cabinet Ministers will accept recommendation 11 and provincial Cabinet Ministers will accept recommendation 14. That by December 3, 1990, governments, industry and labour will accept and begin to implement the recommendations of the report.

On December 3, 1990, the Shipbuilding Action Group will meet again to review progress and hand over outstanding issues to the British Columbia Council of Marine Industries and the Federation of British Columbia Shipyard Unions as appropriate.

1.0 INTRODUCTION

1.1 Background to the Report

On February 20, 1990, the Honourable Michael Wilson, Minister of Finance (Canada), announced the decision not to proceed with the Polar 8 icebreaker. The implications of this decision for British Columbia shipyards are serious and far-reaching. Construction of the Polar 8 icebreaker was to be the key factor in the restructuring necessary for the industry to compete in the shipbuilding and ship repair business in the 1990s. Without the Polar 8, British Columbia shipyards will not be able to generate the essential high technology transfer, maintain the existing skills and expertise, or benefit from the vital spin-offs essential for the future health of the industry.

In response, the Honourable Stanley B. Hagen, Minister of Regional and Economic Development (British Columbia), announced on February 23, 1990, the establishment of the Shipbuilding Action Group to examine ways to revitalize the west coast shipbuilding and ship repair industry.

1.2 Shipbuilding Action Group

In early March, Ministry staff met with representatives from the major shipyards and then separately with the representatives from the shipyard unions. The groups nominated the following to represent their interests on the Shipbuilding Action Group:

Mr. Robert S. Plecas	Ministry of Regional and Economic Development
Mr. Peter E. Quinn	Versatile Pacific Shipyards Inc.
Mr. Thomas C. Ward	Vancouver Shipyards Co. Ltd.
Mr. Malcolm McLaren	Allied Shipbuilders Ltd.
Mr. Charles Gallagher	Point Hope Shipyard Co. Ltd.
Mr. Ron Ferguson	Marine & Shipbuilders, Local 506
Mr. Neil Hindel	International Brotherhood of Boilermakers, Local 1
Mr. George MacPherson	Marine Workers and Boiler Makers Industrial Union, Local 1
Mr. K. Douglas Cullen	Cullen Detroit Diesel Allison Ltd. (BID B.C. Past Chairman)

Mr. T. Arthur McLaren, Allied Shipbuilders Ltd., also contributed to the work of the Action Group.

At the inaugural meeting of the Shipbuilding Action Group, held March 15, 1990, the following mission statement was agreed upon as a course of action:

- Address shipyard productivity and competitiveness, both nationally and internationally;
- Utilize the Polar 8 decision as a prime example of the complexity of dealing with public sector design, specifications and mission guidelines; thereby also addressing technology, commercial viability and cost issues; and
- Review future federal, provincial and private sector procurement options for marine projects, with a view to preparing a strategy which will see British Columbia with a viable, competitive shipbuilding and repair industry for the 21st century.

1.3 Federal Government Shipbuilding Policy

Current federal policy on shipbuilding was set in March, 1986, and reconfirmed in the fall of 1989. The federal government will facilitate industry initiated capacity reduction by:

a. Assisting industry to restructure and diversify:

- offering flexible use of credits under the Shipbuilding Industry Assistance Program (SIAP); and
- utilizing all appropriate industry, labour and community adjustment measures for affected communities.

b. Federal procurement will be directed to Canadian yards on a competitive basis.

c. The federal government will not intervene to support individual yards.

d. The federal government will maintain current tariffs but will provide no subsidies.

To date the federal government has assisted with industry rationalization in Ontario and Quebec and is prepared to assist with rationalization in Atlantic Canada and British Columbia. In Ontario the assistance facilitated the merger of two shipbuilding divisions and the closure of Collingwood Shipyards. Ontario capacity was reduced by about 1600 person-years, leaving about 1350 person-years of capacity in place. The actual direct employment impact was about 650 workers. Federal assistance totalled $14.1 million and provincial assistance was $6.6 million. Assistance for worker adjustment was provided by the company.

In Quebec, government assistance facilitated the termination of shipbuilding and ship repair at MIL Vickers and MIL Tracy. Quebec capacity was reduced by about 2150 person-years. The actual direct employment impact was about 923 workers. Federal assistance totalled $134 million and a separate $20 million federal/provincial Program for Older Worker Assistance (POWA) was also established. Federal procurement contracts for TRUMP and vessel construction for Marine Atlantic Program were also directed to MIL.

2.0 THE POLAR 8 DECISION

2.1 Background

Following the announcement in 1985 that the federal government would build a Polar 8 Icebreaker, a design and specification already in existence was put to tender to three major Canadian shipyards in 1985. Versatile Pacific Shipyards Inc. (VPSI) was the successful bidder, but the contract was not awarded.

Before the contract negotiations could be finalized, the government received three unsolicited proposals from industry for allegedly less costly vessels of more current design than the Canadian Coast Guard (CCG) design for Polar 8.

In response to these proposals, the federal government formed a committee of government and industry experts under the direction of Dr. Angus Bruneau to examine the three proposals and report back on their viability. Although the Bruneau Commission's report has never been made public, it is known that it did recommend that an industry level design could be produced, incorporating the latest Canadian icebreaker technology at less cost and in a shorter construction period than the CCG design.

In July 1987, a Letter of Intent containing several formidable requirements was presented to VPSI as the successful bidder on the first round of tenders. VPSI formed a Joint Venture with Sandwell Swan Wooster Inc. (SSW) operating under the name Polar Icebreaker Constructors (PIC). The Joint Venture negotiated two main sub-contract assignments. The vessel design was awarded to Canadian Icebreaker Design Group (CIDG) in Vancouver and the integration of the main machinery package was awarded to SNC of Montreal, Quebec.

The Contract Definition (CD) phase of the project was awarded to the Joint Venture on November 27, 1987.

It is worthwhile noting that immediately after the CD contract award, a project office was established in downtown Vancouver. From this location a team, totalling approximately 100 at peak, undertook engineering studies, obtained quotations for materials and equipment, estimated production costs, outlined project management systems and documented two comprehensive proposals to construct the vessel.

The initial assignment of the CD contract was to design a triple screw vessel with a diesel electric drive for a budget figure of $400 million in current dollars ($317 million in 1985 dollars), including preparation of a proposal and offer to build the vessel, development of all production and management plans required to undertake construction of the vessel, and acceptance of a model construction contract.

Despite the best efforts of the design teams, the budget price could not be met, owing in part to the difference between the final Statement of Requirements provided by the Government of Canada for the project and the earlier view of Arctic icebreaker needs expressed by the Bruneau Committee.

As the process of negotiation continued into late 1989, Versatile Pacific Shipyards Inc. and federal officials were reviewing cost implications of design items such as:

- Diesel electric propulsion system vs. diesel mechanical;
- Three propellers vs. two propellers;
- One main engine redundancy;

- Ability to steam at full power under tropical conditions;
- Design to greater than passenger ship safety standards (structural fire protection plus a full sprinkler system);
- Extensive aviation and scientific facilities;
- The ability to fight fires on offshore drilling rigs, to the highest classification requirements.

The second assignment of the CD contract was to reduce cost. The CD contract was increased to rework the entire proposal to incorporate a complete diesel mechanical propulsion design. The estimated price with this change still exceeded the budget price for Polar 8, although not by as much as the diesel electric proposal.

By April, 1989, proposals and offers comprising eight volumes and 36 books had been presented for each of the Polar 8 versions — the Diesel Electric Option in November of 1988 and the Diesel Mechanical Option in April of 1989. A final decision on the project had not been made and the Joint Venture had been declared in default for alleged non-compliance in a number of areas including over-budget prices and incomplete facilities plans.

Because of the uncertain circumstances surrounding the project and the magnitude of the project in relation to the budget, many observers, including prospective Versatile Pacific Shipyards Inc. purchasers, believed that the obligation to build the Polar 8 under the existing contract conditions would not be commercially advisable. This potential contractual liability had effectively prohibited VPSI's sale, which was a condition of the Letter of Intent.

2.2 The Sale of VPSI to Shieldings Incorporated

The Offer of Purchase of VPSI by Shieldings Inc. stipulated that there be no unsatisfactory condition with respect to Polar 8. Lengthy negotiations among all parties concluded in the termination (by mutual consent) of the CD contract and all related joint venture and subcontract agreements on June 29, 1989.

2.3 The Bridging Contract

At the federal government's urging, Shieldings entered a Bridging Contract which was a vehicle by which the government could obtain a written proposal and offer from Shieldings to have VPSI construct Polar 8.

The parties entered into the Bridging Contract on the basis of good faith developed during the period leading up to the sale of VPSI. There seemed to be a shared understanding of VPSI's problems, of the efforts and the time required to put them right, and of the constraints of the existing CD contract.

Four months later in November, 1989, an Executive Report on the Polar 8 was submitted by VPSI on behalf of Shieldings to the Department of Supply and Services and Coast Guard for the purpose of briefing Ministers.

At that time substantial progress towards completion of a Bid and Offer had been made and discussions were still progressing on issues including:

- Various cost reductions and specifications changes;
- Build strategy that incorporated the latest shipbuilding technology;

- Simplification of contract terms and conditions; and
- Major industrial benefits for Canadian and British Columbia firms.

While these negotiations were difficult, substantial progress had been made up to the time the project was cancelled in February, 1990.

2.4 Immediate Impact of the Cancellation of Polar 8

The opportunity offered by Shieldings Inc. and federal government officials through the design and negotiation of a more commercially orientated construction contract promised wide-reaching benefits and a rewarding procurement exercise for all parties concerned. For example:

- The build strategy, developed with international expertise, introduced state-of-the-art technology. Some advantages of this would be transferred by VPSI to new construction contracts.
- Aggressive sub-contracting, as Polar 8 was to be a one-time project and given the size of the project, would have been of great benefit to several B.C. shipyards and fabricators. As well, the project provided opportunities for local naval architects, engineers, equipment suppliers and service industries. In the main, Polar 8 was generally a Canadian project except for engines and steel. The manufacture of steel was being pursued by Shieldings with a Canadian steel mill.
- Shieldings Inc. had virtually completed negotiations for the establishment of three new industrial plants in the propulsion, electro-mechanical and electronics industries which would have yielded considerable value in terms of "smart jobs", and domestic and export sales continuing beyond Polar 8. It is not difficult to make a case that the industrial benefits of Polar 8 to VPSI, its shareholders and British Columbia industry developed into figures well beyond the simple price of the ship.
- As for VPSI as a company, the need to downsize became stunningly clear. The market for new construction is diminishing and is fiercely competitive. Procurement by the federal government in B.C. reflects these market characteristics and offers few projects.
- Polar 8 would have given an enormous boost to the training and development of human resources. The large number of skilled personnel in the many trades associated with shipbuilding will be missed in efforts promoting the industrial growth of British Columbia.
- VPSI had many difficult and challenging contracts underway at the time of the takeover by Shieldings. With the size and importance of the Polar 8 project, VPSI diverted a significant measure of resources in order to ensure that federal requirements were satisfied. Inevitably, this put some strain on the company's ability to conduct its ongoing business and market development.
- The costs attributed to the direct work for Polar 8 and to the preparation of strategies and plans, to the point of affecting the build plans for the three ships presently under construction at VPSI, have severely strained the funds available under the Bridging Contract.

Taken in one perspective, a $400 million Polar 8 is less in cost than one of the 12 new Canadian Patrol Frigates (CPF). Contrary to conventional wisdom, Polar 8 costs, while driven by a very broad vessel mission, were being compressed under the direction of the

new owners, and in consultation with federal officials, back to budget levels. Polar 8, with the application of rigorous negotiation and improved management, promised the direct benefits of the construction of a major project and provided substantial leverage to obtain benefits, including offshore technology, for British Columbia.

The market environment, without Polar 8, is stark. Worldwide, new ship construction continues to be fiercely competitive, unprofitable and heavily subsidized in Asia and Europe.

3.0 THE INDUSTRY TODAY

3.1 INTRODUCTION

Shipbuilding is an industry that enhances national prestige. Modern shipbuilding requires a broad industrial base, equipment manufacturing for merchant shipbuilding and provision of armament works and high technology instrumentation for naval construction.

Shipbuilding is a labour intensive industry and, unless affected by other considerations, tends to gravitate to countries and districts paying low wages. Thus, it was for the first half of the twentieth century that the larger vessels for the local trade were built in Great Britain, at costs of about two-thirds that of British Columbia Yards. To overcome the problem of competition from low wage producers, in 1961 the Canadian government introduced a Shipbuilding Subsidy program at a rate of 35 percent of the vessel's selling price. This encouraged the construction of the ferry fleet in British Columbia and permitted some Eastern yards to build for overseas clients.

In the late 1960s and early '70s, in response to a sudden demand for offshore supply vessels, some dozen vessels of this type were built in British Columbia for foreign flag owners. The subsidy, then at 25 percent, made British Columbia yards competitive with third world yards. As late as 1984, one British Columbia yard won a contract for an Arctic Class Supply Vessel from Japanese builders. The British Columbia builders benefitted from a mere 9 percent subsidy.

There has been no subsidy or other form of assistance to the Canadian shipbuilder since 1985, the only protection being a 25 percent tariff on foreign built vessels entering into Canadian Registry (except commercial fishing vessels over 100 feet in length).

Despite a lack of national assistance to Canadian shipbuilders, direct subsidies in the order of 20 percent and indirect subsidies of 10 percent or more are paid to shipbuilders in the European Common Market. Thus, if Ottawa were to decide to forgo the tariff on foreign built ships entering Canada, there is no possible way the Canadian shipbuilder could compete for new Canadian tonnage.

3.2 Perceptions of the Industry

There is a perception in government, reinforced by various studies commissioned from industry consultants, that the British Columbia shipbuilding industry is not sufficiently productive, and has high labour costs leading to an inability to compete effectively with other shipbuilding centres. This report will address these perceptions in an attempt to determine their validity and will document British Columbia shipyards' capabilities, assets and problems, in an attempt to chart a strategy for the future.

3.3 Profile of British Columbia Shipbuilding and Ship Repair Industry

In 1989, approximately 70 companies of various types were active in shipbuilding and ship repair in British Columbia. Many of these are very small operations, in some cases set up for a single project. Others devote themselves exclusively to the pleasure boat market which, although a significant industry in itself, especially for the export potential, is considered outside the scope of this study. Excluding the non-commercial and minor operations,

however, leaves a balance of 34 British Columbia companies active in shipbuilding and ship repair. At the present time, direct employment in these 34 companies is about 1800 persons, with an additional 800 also employed in closely related businesses.

Of the 34 companies active in commercial shipbuilding and ship repair in British Columbia, 11 can be considered to be "significant" or "major" players. This is not to discount the importance of other companies, many of whom have the capability to become significant players given the correct business strategy and the right market circumstances.

Table I (page 9) lists the 34 companies while **Table 2** (page 10) gives a comparison of the 11 major company facilities, their potential and present employment, union status and relative importance of new construction compared to repair. Steel production capacity has not been included in this comparison, as it can be a misleading statistic. Many yards have a steel production capability geared to vessels such as barges, icebreakers or arctic structures where steel is a significant portion of the project. For other types of vessels, steel may be a smaller portion, so a yard can be fully employed without its steel production capability being at full capacity.

The ratio of new construction to repairs is an estimate based on an assessment of the shipyard's normal business. This ratio can change significantly at any particular time, dependent on the available work.

Table 2 also lists the government controlled yards, discussed later in this section.

Figure 1 (page 11) shows the location of the major private shipyards and the government yards, indicating their compact distribution geographically within the province.

In evaluating the present status of the British Columbia shipbuilding industry, it is important to clearly differentiate between "shipbuilding" and "ship repair". Shipyard business can conveniently be considered as breaking down into four different project "types", namely shipbuilding, ship conversions, ship refits and ship repairs.

Shipbuilding involves the construction of a new vessel, including the hull and all the associated machinery, systems and outfit.

Ship conversions can be defined as modifications to an existing vessel which changes either the dimension or purpose of the ship. A good example of this is the British Columbia Ferry Corporation fleet conversions which have involved lengthening and heightening of existing vessels to increase capacity. Such conversions can involve more work than many new constructions, and can tax management and labour skills more than the building of new vessels.

Ship refits are more straightforward than shipbuilding or conversions, but can still involve considerable work and management planning. Most government and many private sector vessels go through a major refit at least once during their lives. This can involve re-enginging, extensive electrical, electronic and accommodation upgrades, and similar work. The value of such contracts can run to several millions of dollars and even more for major government vessels.

Ship repair, on the other hand, is comparatively straightforward. This involves dry docking and painting, and replacement of corroded or worn-out parts and material such as piping and steel plating. Ship repair is a very important component of the British Columbia industry, as a number of yards and private contractors specialize in this aspect of the business. Because all vessels need to be dry docked and painted at regular intervals, ship repair tends

to be less cyclical than shipbuilding over the years. However, it is fair to say that ship repair requires different sophistication in management and different skill in labour.

The federal government considers conversions and refits as "repairs", even though the manpower requirements and cash value often far exceed those of many new construction projects. As repairs are regionally directed contracts, not open to nationwide bids, this has meant that many very large contracts have not been available to the British Columbia shipyards. An example presently underway in Eastern Canada is the CCGS *Louis S. St-Laurent* refit, worth about $100 million.

TABLE 1

BRITISH COLUMBIA SHIPYARDS

DUNCAN
Lifetimer Boats

FRASER VALLEY
Argo Marine Builders Ltd.
Valley Boat Works Ltd.
T.D. Manufacturing

NANAIMO
Nanaimo Shipyard Ltd.

NEW WESTMINSTER
Progressive Marine Ltd.

NORTH VANCOUVER
A.B.D. Enterprises
Allied Shipbuilders Ltd.
Barrie Farrell Boats
McKenzie Barge & Marine Ways Ltd.
Pacific Western Shipbuilders Co.
Vancouver Shipyards Co. Ltd.
Versatile Pacific Shipyards Inc.

RICHMOND
A.M. Welding
CEFER Designs Ltd.
Frostad Boats
Hi-Line Aluminum Welding Ltd.
Landmark Services Ltd.
Pacific Bowpickers
Shore Boat Builders Ltd.
Thompson Bros. Aluminum Welding Ltd.
Wahl Boats
Trites Marine Services Ltd.

SIDNEY
Canoe Cove Manufacturing Ltd.

SURREY/DELTA
Raider Aluminum
Vito Steel Boat & Barge Construction Ltd.

VANCOUVER
Celtic Shipyard
West Coast Manly

CENTRAL VANCOUVER ISLAND
Alberni Engineering & Shipyard Ltd.
Daigle Welding & Marine Ltd.
Gooldrup Boat Building
Independent Shipwrights Ltd.

VICTORIA
Point Hope Shipyard Co. Ltd.
Versatile Pacific Shipyards Inc.

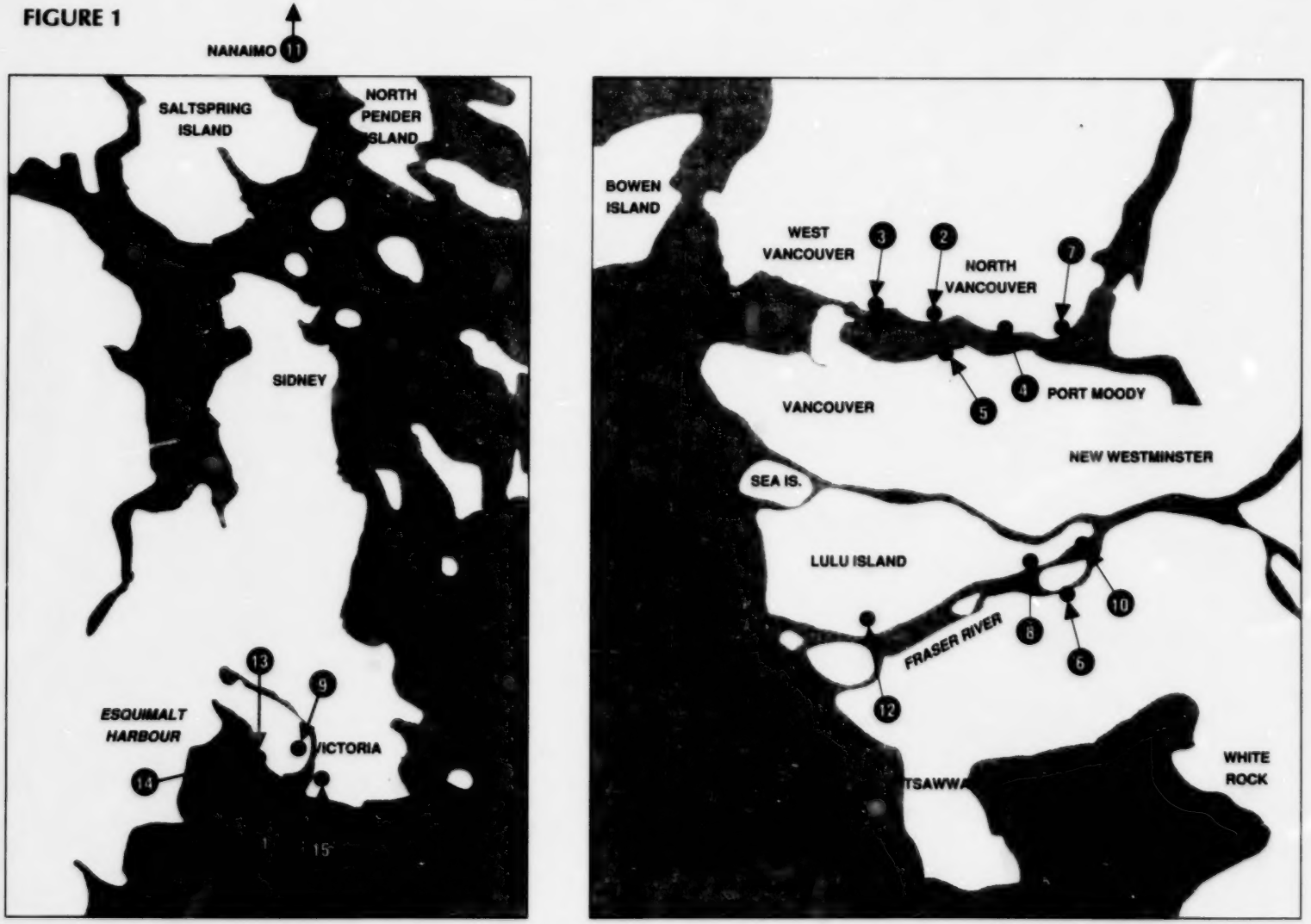
TABLE 2 Major British Columbia Shipyards

NO.	YARD	TOTAL AREA (sq. meters)	COVERED AREA (sq. meters)	HAULOUT (tonnes)	FULL EMPLOYMENT	PRESENT EMPLOYMENT	UNION Y/N	NO. OF LOCALS	RATIO NEW/REPAIR
	Private Yards								
1.	Versatile Pacific (Vic.)	52,600	16,700	1,200	1,200	420	yes	12	70/30
2.	Versatile Pacific (N. Vanc.)	145,700	10,300	36,000	1,200	150	yes	11	20/80
3.	Vancouver Shipyards	140,000	15,300	1,200	700	380	yes	4	20/80
4.	Allied Shipbuilders	40,500	3,400	1,700	200	110	yes	3	40/60
5.	West Coast Manly	6,700	2,800	550	130	75	yes	1	50/50
6.	Vito Steel Boat & Barge	121,000	4,650	-	120	25	yes	1	100% new
7.	McKenzie Barge & Marine	20,000	4,050	800	100	90	yes	2	50/50
8.	Shore Boatbuilders	14,000	1,850	-	50	40	no	-	100% new
9.	Point Hope Shipyard	12,000	2,000	600	120	96	yes	1	100% repair
10.	Progressive Marine	20,000	1,500	380	90	50	yes	1	50/50
11.	Nanaimo Shipyard	11,600	1,400	700	60	50	no	-	100% repair
	Subtotals	**584,100**	**63,950**		**3,970**	**1,486**			
	Government Yards								
12.	Deas Dock (BCFC)	N/A	N/A	-	200	170	yes		100% repair
13.	Esquimalt Graving Dock*	N/A	N/A	100,000	23	23	yes		-
14.	SRUP (DND)	N/A	N/A	3,000	1,000	1,000	yes		100% repair
15.	OCG Victoria	N/A	460	-	15	12	yes		100% repair
16.	IOS, Pat Bay (DFO)	10,000	5,400	55	25	17	yes		100% repair
17.	Prince Rupert (DFO)	N/A	N/A	55	8	8	yes		100% repair
	Subtotals				**1,271**	**1,230**			
	Grand Totals				**5,241**	**2,716**			

* Drydock facility only, all work performed by private contractors. Locations identified on page following - Figure 1

May, 1990

FIGURE 1


NANAIMO
11
SALTSPRING ISLAND
NORTH PENDER ISLAND
SIDNEY
13
9
ESQUIMALT HARBOUR
VICTORIA
14
15
BOWEN ISLAND
WEST VANCOUVER
3
2
NORTH VANCOUVER
7
4
PORT MOODY
5
VANCOUVER
NEW WESTMINSTER
SEA IS.
LULU ISLAND
10
6
8
FRASER RIVER
12
TSAWWA
WHITE ROCK

3.4 Current Industry Capacity

The 11 principal private sector shipyards currently employ about 1500 people. These levels are far less than the number that could be employed if additional business was available.

At full capacity in the past, the principal yards have employed about 4000 persons, including both ship repairs and new construction. As an indication, this amounts to about 4 percent of the secondary manufacturing employment in British Columbia, excluding the wood and paper products industries. Including government controlled shipyards and related businesses, the employment level at full capacity increases to about 6000 persons or about 6 percent of the secondary manufacturing employment in British Columbia.

Of the 1500 people presently employed by the principal shipyards, about 1000 are engaged in ship repairs. This leaves about 500 involved with shipbuilding, compared to a potential employment of about 3000, that is, about 17 percent utilization of new construction capacity.

3.5 Current Industry Productivity and Competitiveness

3.5.1 Canada

In the past, privately controlled British Columbia shipyards have proven to be very productive and competitive in comparison to yards elsewhere in Canada. This can be attributed to a number of factors, including:

- A base workload servicing the local fleets, which is maintained at a reasonably steady level year round;
- A suitable climate, enabling outdoor work year round;
- A sufficient number of shipyards, all privately owned, to ensure a competitive environment, thus encouraging higher productivity and better management practices; and
- An industry which is very compact geographically (see Figure 1), leading to the ready movement of workers between shipyards and ready transportation of supplies and material to the shipyards.

Over the past five years, British Columbia private shipyards have shown themselves to be the most competitive in many of the tendered competitions of the federal government for new construction, including:

- M.V. *Leonard Cowley*, 72 metre ice-class Fisheries Patrol Vessel
- M.V. *John P. Tulley*, 69 metre ice-class Hydrographic Survey Vessel
- CCGS *Samuel Risley*, Type 1050 Coast Guard Ice-class NavAids Tender
- CCGS *Martha L. Black*, Type 1100 Coast Guard ice-class NavAids Vessel
- CCGS *George A. Pearkes*, Type 1100 Coast Guard iceD-class NavAid Vessel
- CCGS *Henry Larsen*, 100 metre Class 4 Icebreaker
- Two Canadian Coast Guard Patrol Vessels, currently being built at VPSI Victoria.
- Hydrographic Research Vessel, currently being built at VPSI Victoria.
- Four Torpedo Recovery and Ship Ranging Vessels currently being built at West Coast Manly shipyard in Vancouver.

It should be noted that the *Martha L. Black, George A. Pearkes* and *Henry Larsen* were regionally directed contracts. However, in all cases, similar vessels were built in shipyards elsewhere in Canada, and the British Columbia shipyard proved competitive.

Shipyards in British Columbia have built some 60 vessels presently in service in the Canadian Arctic and have repeatedly demonstrated their ability to produce high quality vessels under severe time and cost constraints.

An example among many of British Columbia shipyard's support of Arctic operations was the construction of M.V. *Arctic Ivik*, an Arctic Class 2, 67.4 metre length Anchor Handling Supply Vessel by Allied Shipbuilders in 1984-85.

First working drawings were commenced for the vessel December 1, 1984, first steel was cut January 2, 1985, the first sea trial was July 1, 1985 and the vessel sailed for the Beaufort Sea July 20, 1985. It is understood that the owners of M.V. *Arctic Ivik* concurrently sought construction quotations from Japanese shipyards and that Allied Shipbuilders was able to match their price, making allowance for a 9 percent construction subsidy then available in Canada, as well as offer and meet a superior delivery date.

3.5.2 International

For shipbuilding typical of that historically carried out in British Columbia — that is, comparatively small, high value vessels such as ferries, icebreakers, tugs, fishboats and government patrol/surveillance/research vessels — British Columbia shipyard productivity and competitiveness is comparable to shipyards elsewhere in the world. Typical person-hours for a 30 metre trawler quoted by British Columbia shipyards range between 35,000-40,000 hours, and for a similar size government patrol type vessel about 38,000 hours, which is in line with best current European productivity.

For barges built in British Columbia shipyards, the average labour input per tonne of steel is about 30 to 35 hours. For tugs and fishboats, it ranges from 70 to 80 hours and for military vessels, it is approximately 140 to 150 hours. This also compares favourably with international productivity.

Identical icebreaker supply vessels, built in 1981 by a Japanese and a British Columbia shipyard for Gulf Canada Resources for service in the Canadian Beaufort, were almost identical in price and of comparable quality. The British Columbia shipyard had the assistance of a 9 percent subsidy to offset lower wages in Japan.

3.5.3 Shipyard Unions

In addition to the responsibility and accountability which must be assumed by management for the success of the shipbuilding and ship repair industry in British Columbia, is support of good management by a well educated, well trained and motivated work force.

Past experience has shown that high wages and strong unions do not automatically indicate lack of productivity and competitiveness. West Germany and Japan remain world leaders in many industrial sectors in spite of high levels of union membership and/or rising wage rates.

British Columbia's trade and industrial unions play a very significant part over the long term of providing training, continual employment and good wages to Canadian shipyard workers, and providing a skilled pool of workers for the shipyards to draw upon.

However, to ensure continuing productivity and competitiveness of the British Columbia industry, and thus long term employment, the trade and industrial unions to which workers belong must be responsive to market trends and pressures and other factors which affect the ability of the industry to compete and prosper nationally and internationally.

The principal factors affecting union effectiveness include the issue of member seniority within each union and the number of unions representing the workers in any particular shipyard. A considerable amount of cross trade flexibility is currently in place at West Coast Manly, Vito Steel Boat, McKenzie Barge, Point Hope Shipyard, Progressive Marine and the two non-unionized yards. VPSI and Vancouver Shipyards could also benefit from such flexibility if union jurisdictions could be rationalized. The following table **(Table 3)** summarizes the present union jurisdiction in British Columbia's major privately owned shipyards.

Specific methods for increasing shipyard productivity, for both management and labour, are discussed in Section 5.

3.6 Government Controlled Yards

Not included in any of the previous discussions are three large and three smaller government owned and operated ship repair facilities in British Columbia.

3.6.1 Deas Dock Refit Complex

British Columbia Ferry Corporation (BCFC) began operations at Deas Dock in 1965 with an electrical department, machine shop and tie up facilities for two vessels. Deas Dock can now tie up five large vessels and is capable of undertaking major engine overhauls.

Currently about 170 people are employed at Deas Dock, including the following technicians:

- 40 mechanical fitters
- 5 machinists
- 5 welders
- 4 diesel technicians
- 15 others

The annual payroll is about $7 million.

According to industry sources, BCFC ship repair bids contain both mandatory and optional items. On occasion only a percentage of the optional items are completed with the balance often not being done. In some cases shipyards are contracted simply to remove a major component, with the unit overhaul being done by BCFC staff.

TABLE 3 Shipyard Union Jurisdiction

UNION	JURISDICTION	VPSI VANC.	VPSI VICT.	ALLIED	VSY
Painters, loc. 138	Inside painting, & above bulwarks	X			
Painters, loc. 1163	Inside painting, & above waterline		X		
International Brotherhood of Elect. Workers	Electricians	X	X	X	X
Plumbing & Pipefitters	Pipefitters	X	X	X	X
Sheetmetal Workers	Sheetmetal journeymen	X	X		
Operating Engineers	Crane operators	X	X		
Carpenters & Joiners	Joiners and shipwrights	X	X		
Office & Technical Workers	Clerical	X	X		
Machinists and Aerospace Workers	Machinists and engine fitters	X			X
Machinists, Fitters and Helpers	Machinists and engine fitters		X		
Marine & Boilermakers	Welders, fitters, drivers, labourers, riggers, sandblasters, spray painters	X		X	
Marine and Shipbuilders	Welders, fitters/platers, sandblasters/painters, shipwrights, joiners, riggers, stagers, crane operators, docking crew, storemen, loftsmen				X
Ironworkers and Shipyard Riggers	Riggers		X		
Boilermakers, Iron Shipbuilders	Welders, fitters		X		
Dock and Shipyard Workers	Labourers, painting		X		
Heat and Frost	Asbestos removal, insulation	X			
Refrigeration Workers	No work for past 7 years				

Notes:

1. Contract bargaining at VPSI is handled as follows:
   - all union locals develop their own proposals and then discuss all proposals at the Joint Shipyard Conference Meeting;
   - four members each from Vancouver and Victoria are elected to the Joint Shipyard Bargaining/Negotiating Committee;
   - the Committee elects a chairman and vice-chairman.
2. All other unionized shipyards are represented by single union agreements.
3. Shore Boat Builders and Nanaimo Shipyard are the only major non-union shipyards in British Columbia.

Although the fleet comprises some 38 vessels, the private sector believe they are receiving less and less of the maintenance work. The frequency of docking vessels has been reduced by superior coatings and changes to classification survey schedules. The industry perception is that only work that absolutely cannot be completed by BCFC is contracted.

During 1986/87, BCFC contracted for $26.4 million in outside work, including over $8 million with shipyards and about $6.7 million with asbestos removal contractors.

3.6.2 Esquimalt Graving Dock

This is the largest non-military graving dock on the west coast of the Americas. The facility is owned and operated by Public Works Canada and provides dry docking services to all shipyards. The dock can handle vessels up to 100,000 deadweight tonnes and is serviced by three heavy lift cranes.

After unsuccessfully attempting to sell the facility in 1985, Public Works decided to implement a series of operational changes. Staff has been gradually reduced from 32 down to the current staff of 23, user fees have been progressively increased and more revenues have been generated from vessel moorage and uplands leasing to fabrication/assembly companies. Over the past five years annual revenues have increased from $700,000 to $1.7 million. With one more rate increase this year, the facility should cover normal and cyclical operating costs. However, with unanticipated expenditures for major repair work on both the 30 and 150 tonne cranes, annual operating costs have been about $400,000 over budget, at about $2.5 million.

BCFC is discussing, with Public Works Canada, the possibility of purchasing the Esquimalt Graving Dock.

3.6.3 Ship Repair Unit Pacific (SRUP)

Ship Repair Unit Pacific, located at the Canadian Navy's Esquimalt base, has served to support the navy's Pacific fleet since the 1890s. According to Captain Robert Preston, Chief of Staff Engineering and Maintenance, Ship Repair Unit Pacific, the task of the facility is to:

- Provide operational combat ships to the Pacific fleet commander during wartime; and
- Ensure a swift transition from peacetime activity to wartime readiness. Thus during peace time, the facility must be practiced at maintaining the combat fleet in readiness.

Ship Repair Unit Pacific has a civilian work force of about 1000 people, with about 800 to 850 on permanent staff. The staff complement includes administrators, trades people and about 80 apprentices. About 50 percent of the trades people are skilled weapons, electronics and other high technology experts.

Ship Repair Unit Pacific's workload is distributed about equally as follows:

- Running repairs and breakdown;
- Components that are in the supply system (e.g. rebuilding a unit which has been replaced with a refurbished unit on board) and components that are used at the base, such as maintaining radar units used at the fleet school;
- Short term refit, repair and maintenance; and
- Long term refit, repair and maintenance.

Ship Repair Unit Pacific annual operating budget is approximately $43 million. Local contracting out of work is about $3.5-$4 million per year. Local marine industry contractors include:

- Point Hope Shipyard Ltd.
- Nanaimo Shipyard Ltd.
- Jenkins Marine Ltd.

The life cycle m tenance contracts for major shipboard systems are contracted out by Departmen National Defence (DND) headquarters in Ottawa. For major vessel maintenance, refit and modernization projects, about 85 percent of the work typically is done by Ship Repair Unit Pacific with the balance contracted out to the private sector.

The navy's hydrographic vessel *Endeavour* has recently completed a $15 million modernization project at VPSI in Victoria. This work was available to be contracted out because the *Endeavour* is not classified as a "combat" vessel. The HMCS *Provider* is also scheduled for a $20 million modernization in the near future. The *Provider* is considered a combat vessel, however, the Department of National Defence has advised that $7 million of the modernization will be contracted out to the private sector.

Future trends in the activities at Ship Repair Unit Pacific will be affected by the fleet's older steam powered destroyers receiving only minimum repair work and the fleet's replacement vessels will be designed to be supported using short, intensive work periods, and an emphasis on maintenance by exchange. Thus, the level of contracted ship refit and maintenance work is reducing and is not expected to increase in the future. This trend is further affected by construction of new berthing, cranes and enclosed maintenance facilities for Ship Repair Unit Pacific, including a refurbished marine ways and enclosed work areas for smaller non-combatant vessels. This construction program will cost approximately $75 million.

3.6.4 Canadian Coast Guard Victoria Base

The Victoria base employs 12 people on vessel maintenance and sometimes as many as 15. The base has about 5000 sq. ft. of covered space devoted to ship maintenance. Although the base has no haulout capacity, the Coast Guard hires a local boat hauling contractor to remove small boats from the water.

Ship's engineers and maintenance staff conduct what is called "self maintenance" on an ongoing basis, which includes painting, engine room maintenance, major overhauls of smaller engines and generator overhauls. Major haulout and refit work

is scheduled on the vessels *Black, Pearkes, Douglas* and *Darby* about every two years with private shipyards. Smaller Search and Rescue (SAR) vessels, lifeboats and the vessels *Pt. Henry* and *Pt. Race* are normally maintained in-house. The three fleet hovercraft are also maintained in-house.

Coast Guard might, in the future, put in place standing work orders with some yards for minor work, particularly painting and perhaps main engine overhauls.

3.6.5 Department of Fisheries and Oceans, Patricia Bay and Prince Rupert Bases

The Patricia Bay base at the Institute of Ocean Sciences currently employs 17 people with full employment capability of 25 people. The Prince Rupert base currently employs eight people. These bases are used to maintain a fleet of 32 vessels plus about 60 launches and support boats. Seven larger vessels (above 55 tonnes) are sent to private yards for out of water repair and maintenance.

Officials estimate that over half of the vessel maintenance budget is spent on contracting out on the seven large vessels plus various other contracts for electrical, welding, steel fabrication and electronics, plus minor shipyard contracts. In addition, major repair and refit contracts are awarded by DFO Ottawa. The Patricia Bay facility also supports some of the efforts undertaken by the Institute of Ocean Sciences.

No capital improvement or expansion is planned in the near future. Estimated annual budget is unavailable at this time.

3.7 Related Businesses

In addition to those employed directly by the shipyards, a signifi nt number of people earn their living in businesses closely related to and in support of the industry. Principal among these businesses are equipment manufacturers, technical consultants, support facilities and subcontractors. Many of the manufacturers and consultants are world class, have established an excellent reputation and find a ready market for their products and services across Canada, in the United States and overseas.

It is correct to say that they have established a "centre of excellence" in British Columbia within their fields. However, it must be understood that a viable shipbuilding industry is critically important to these related businesses; without the "feedback" between them and the shipbuilding industry, it would be very difficult to maintain and improve the present standards.

3.7.1 Equipment Manufacturers

The Vancouver and Victoria areas are home to a number of companies engaged in the design and manufacture of equipment for the marine industry. The principal items manufactured are:

- Power systems
- Control systems
- Survival and safety equipment
- Winches

Steering gears

Electronics, including autopilots

Propellers

Davits

Ship's boats

Shaft brakes

Doors, window, hatches

Bow thrusters

It is estimated that about 500 persons are employed in this sector of the industry.

3.7.2 Technical Consultants and Support Services

The Vancouver and Victoria areas are home to a number of consulting companies specializing in ship design (Naval Architecture). In addition to a large number of small businesses, there are four major firms based in Vancouver and another four in Victoria. Specialist consultants also provide services in the areas of stress and vibration, noise control, electrical/electronics and anti-corrosion. The Ocean Engineering Center, B.C. Research, located at University of British Columbia, provides model testing facilities to consultants and the industry.

Approximately 120 people are employed in this sector of the industry.

3.7.3 Subcontractors

The nature of shipbuilding, especially in the case of smaller yards, is that it is not practical for all required trades, skills and equipment to be resident at the shipyard. For this reason, a number of subcontractors operate in the Vancouver-Victoria area to service the industry. The principal tasks which they perform include:

- Electrical installations;
- Tank cleaning;
- Insulation, including asbestos removal; and
- Heavy machining, including repair of shafts.

Over 200 people are employed in this sector of the industry.

In addition to the above subcontractors, who operate more or less exclusively in the shipbuilding and/or repair industry, there are several large steel fabrication companies, such as Canron, located in the Vancouver area, and Victoria Machinery Depot in Victoria. Although generally not active in shipbuilding, they are available to provide extra steel fabrication capacity in the event of a large contract such as an Arctic drilling structure. In the early 1970s, Canron worked with several shipyards, supplying steel panels for a series of barges for northern service.

4.0 MARKET FORECAST

4.1 World Market Trends

Forecasts for world shipbuilding in the 1990s are somewhat mixed, and although conclusive trends are not yet evident, an improving picture appears to be emerging. The overall long term health of world shipbuilding will be dependent on a number of factors, including an aging fleet, shifts away from military contracts, freight rate trends, shipbuilding capacity and profitability, and intervention by governments.

The level of world shipbuilding activity has fallen from a peak of about 20 million Compensated Gross Registered Tonnes (CGRT) in 1975 to about 11 million CGRT in 1988. This decline represents, with only a couple of modest reversals, an unparalleled period of recession (see **Figure 3**). According to recent assessments prepared by A & P Appledore, world demand is likely to average about 15.7 million CGRT per annum through to 1994 (see **Figure 3**). This increase in demand will be driven in part by an aging world fleet. Appledore estimated that as of January, 1988, approximately 63 percent of the world fleet was aged 10 years or over, indicating a significant market for replacement vessels over the next 10 to 15 years.

Improved political stability may lead to a reduction in the orders for naval vessels, which could result in the conversion of some military shipyards to commercial shipyards. To the extent this results in expanded capacity and more competitive pricing, this would be detrimental to the shipbuilding industry.

The 1989-90 trends in oceangoing freight rates, as traced by A & P Appledore and H.P. Drewry, indicate a steady increase in rates. These trends suggest improved demand and therefore improved prices for new construction in the future.

Over the past 5 years, the number of major shipbuilding yards has fallen from 282 to 197, according to A & P Appledore. Although Bulgaria, Romania, Yugoslavia and China have opened major yards, large capacity reductions have occurred in Europe and the Far East. Even with these closures, the European industry has been hard pressed to attain profitability. In 1988 it was estimated that for new ship construction an efficient European yard incurred costs of 10 to 39 percent greater than the market price of the vessel before subsidies. Asian yards, with lower steel, labour and equipment costs, incurred costs of 1 percent less to 10 percent greater than the market price of the vessel.

More recent trends now indicate that some European yards are approaching break even, and Asian yards are now only accepting contracts that offer the prospect of significant profitability.

Recent price increases and resulting profitability can only be sustained as long as major capacity is not reactivated or new yards opened. Apparently Japanese shipbuilders and others are considering reactivating capacity. Probably the major constraint to expanded capacity is the current unavailability of skilled shipyard workers in the major shipbuilding regions of Europe and Asia.

During the extended shipbuilding recession, most governments other than Canada have offered a variety of subsidies including general yard subsidies, contract price subsidies, preferential financing and various tax incentives. The subsidies have been designed to

strengthen competitiveness and to maintain employment in depressed regions. The European Economic Community (EEC) guidelines currently limit direct subsidies to 20 percent of the contract price of a vessel. It is the aim of the EEC to abolish all shipbuilding subsidies within the next two years. However, if the EEC is not entirely successful in eliminating subsidies, as some industry analysts predict, the prices for new construction may not be sufficiently high to maintain acceptable profit levels.

In summary, the demand for new ship construction is likely to increase over the next five years and will likely continue to the end of the decade. However, other forces may intervene to influence profitability and utilization rates. If we experience increased worldwide demand, profitability and utilization, in combination with the existing 25 percent tariff rate protection (including fishing vessels over 100 feet), the British Columbia industry should be able to maintain and even improve its competitiveness for specialty vessels in the domestic market.

4.2 British Columbia Market Trends

The following forecast of shipbuilding and repair activity for the period to the year 2000 is based on data supplied by Industry, Science and Technology Canada (ISTC) and major fleet operators.

4.2.1 Ferries

BCFC recently awarded contracts to build two 85-car ferries and have invited bids for two 470-car "super" ferries. BCFC is also planning a major vessel modification project for later this year. In addition, there may be a need for two additional "super" ferries and two 50-car ferries. Six hundred and fifty person-years of employment per "super" ferry has been assumed — 150 person-years for the major modification, 110 person years for each 85-car ferry and 100 person-years for each 50-car ferry.

It should be noted that by the turn of the century, the older major vessels in the BCFC fleet will be in excess of 35 years old and will be due for replacement.

4.2.2 Tugs and Barges

With the forest industry's activities unlikely to expand and with the probable decline in petroleum products shipments with the completion of the Vancouver Island Pipeline, the tug and barge fleet new construction will be limited to replacement. This could result in perhaps 50 person-years of work per annum in 1990/1991 and 80 person-years per annum thereafter, for new construction. This may increase if new environmental standards are set for transporting petroleum products and potentially polluting cargoes.

4.2.3 Fishing Vessels

Probably the most difficult market to predict is fishing vessels. West coast fishing vessels are comparatively small, 35 feet (10 metres) to 100 feet (30 metres) in length. During the last two years or so, there has been a mini boom in fishing vessel con-

struction in the 50 feet (15 metres) to 70 feet (21 metres) range. About 42 such vessels have been built, 12 in steel and 30 in aluminum. This work is a mainstay for several yards, with several more building a number of the smaller (35 ft.) types. A 65 foot fishing boat costs in the region of $1.4 million, with a high involvement by local equipment manufacturers. This is one area where British Columbia shipyards can be considered to have a product marketable in the third world, with government assistance in the form of concessional financing.

4.2.4 Arctic Vessels and Structures

The shipbuilding market demand for the Arctic is difficult to predict. In the 1970s, this was a very major market sector. British Columbia naval architects and shipyards built up an enviable reputation for design, construction, speedy delivery and competitive prices. Eventually, the Arctic development will increase again, leading to new business for shipbuilders.

4.2.5 Canadian Coast Guard (CCG)

As a result of the Polar 8 decision, Coast Guard requirements for new construction during the next decade will drop from 5515 person-years to 3315 person-years.

We have assumed that a proportion of this work will be awarded to the west coast.

Coast Guard is projecting major modification on five east coast based vessels, as follows:

Vessel	Type	Contract Period
Griffon	Medium icebreaker	1991-92
J.E. Bernier	Medium icebreaker	1991-92
Pierre Radisson	Medium icebreaker	1993-94
Norman McLeod Rogers	Icebreaker	1994-95
Bartlett	Ice-strengthened	1994-95

Although this work is estimated to total $64.2 million, British Columbia yards will not be eligible to bid. Department of Supply and Services (DSS) guidelines specify that:

"For ship repair, refit and mid-life modernization the area of competition will be eastern Canada for eastern Canadian-based vessels and western Canada for western Canadian-based vessels."

In many cases, these major modifications exceed the value of nationally bid new construction contracts.

The CCG major icebreaker fleet of seven vessels has three which were built in British Columbia shipyards, including the most modern in the fleet. This demonstration of British Columbia shipyard competitiveness and capability dictates that mid-life refits and major conversions for these vessels should be open to national bid.

4.2.6 Department of Fisheries and Oceans (DFO)

Industry, Science and Technology Canada estimates Department of Fisheries and Oceans new construction requirements may total 3300 person-years over the forecast period. Because many DFO projects are subject to regional bids, it is unlikely that British Columbia could capture more than say 30 percent of total contracts. Thus we may capture about 1000 person-years of work or 100 person-years per year.

4.2.7 Department of National Defence (DND)

The only major new build program not already underway in eastern Canada and scheduled by DND for the 1990s is the Maritime Coastal Defence Vessels program. With lead yards to be located in either Ontario or Nova Scotia, it is unlikely that British Columbia could capture more than 50 percent of the 1500 person-years, or about 750 person-years of this program.

However, in addition to the Maritime Coastal Defence Vessels program, we understand that DND will have a requirement of 1060 person-years for the construction of a number of auxiliary vessels. With the proven competitiveness of British Columbia shipyards, compared to the rest of Canada for these types of vessels (proof is the successful bid by West Coast Manly for the four torpedo recovery and ship ranging vessels for DND), we consider that British Columbia yards can capture 50 percent of this business, or 530 person-years.

As with Coast Guard, DND also has plans for a significant number of major vessel modifications, refits, reconfigurations and other major works. Again most of these projects, even very large ones, tend to be restricted to yards in the region where vessels are based. We are awaiting details on the DND budget in this regard.

4.2.8 Ship Repair

Currently, about 1000 private sector shipyard workers are employed in vessel repair, maintenance, refit and modification. This number is not expected to change significantly.

4.2.9 Future Scenarios

From the foregoing, three scenarios for the next decade have been developed.

Table 4 is the "base" case scenario, taking into account expected business and a reasonable estimate of other work which is less easily predicted. Basis of the scenario is:

British Columbia Ferry Corporation	two 85-car ferries; two "super" ferries (the 2nd and 3rd); one major vessel modification
Tugs & barges	as outlined in Section 4.2.2
Fishing	35 person-years/annum

Arctic	1000 person-years from 1993 indicating an improvement in arctic marine activity
Coast Guard	30 percent of projected work
DFO	as outlined in Section 4.2.6
Maritime Coastal Defense Vessels	as outlined in Section 4.2.7

Table 5 is a pessimistic scenario, calculated from **Table 4** but deleting the "super" ferries, the arctic work, and reducing all other new construction by 20 percent.

Table 6 is an optimistic scenario, again calculated from **Table 4**, but adding the full British Columbia Ferry Corporation program, that is, an additional 2 "super" ferries and 2 - 50 car ferries. Also, the Polar 8 is included on the original schedule, and tug and barge, fishing, Arctic, DFO and DND auxiliary vessels have been increased by 20 percent.

The three scenarios are plotted graphically as **Figure 2.**

TABLE 4 New Construction and Ship Repair Employment Base Scenario (Person-Years)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Total
New Construction												
BCFC	145	225	325	325	-	162	325	162	-	-	-	1669
Tug & Barge	50	50	80	80	80	80	80	80	80	80	80	820
Fishing	35	35	35	35	35	35	35	35	35	35	35	385
Arctic	-	-	-	50	100	100	150	150	150	150	150	1000
Coast Guard	80	80	155	125	90	75	-	-	160	195	35	995
DFO	100	100	100	100	100	100	100	100	100	100	100	1100
Maritime Coastal												
Defense Vessels	-	25	40	50	65	90	105	85	55	10	-	525
DND Aux. Vessels	-	-	20	40	60	75	75	75	75	60	50	530
Subtotal	**410**	**515**	**755**	**805**	**530**	**717**	**870**	**687**	**655**	**630**	**450**	**7024**
Ship Repair	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	11000
Grand Total	**1410**	**1515**	**1755**	**1805**	**1530**	**1717**	**1870**	**1687**	**1655**	**1630**	**1450**	**18024**

TABLE 5 Total New Construction and Ship Repair Employment Pessimistic Scenario (Person-Years)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Total
New Construction												
BCFC	145	225	-	-	-	-	-	-	-	-	-	370
Tug & Barge	40	40	64	64	64	64	64	64	64	64	64	656
Fishing	28	28	28	28	28	28	28	28	28	28	28	308
Arctic	-	-	-	-	-	-	-	-	-	-	-	-
Coast Guard	64	64	124	100	72	60	-	-	128	156	28	796
DFO	80	80	80	80	80	80	80	80	80	80	80	880
Minesweepers	-	20	32	40	52	72	84	68	44	8	-	420
DMD Aux. Vessels	-	-	16	32	48	60	60	60	60	48	40	424
Subtotal	**357**	**457**	**344**	**344**	**344**	**364**	**316**	**300**	**404**	**384**	**240**	**3854**
Ship Repair	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	11000
Grand Total	**1357**	**1457**	**1344**	**1344**	**1344**	**1364**	**1316**	**1300**	**1404**	**1384**	**1240**	**14854**

TABLE 6 New Construction and Ship Repair Employment Optimistic Scenario (Person-Years)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Total
New Construction												
BCFC	145	550	650	325	-	212	375	375	375	162	-	3196
Tug & Barge	60	60	96	96	96	96	96	96	96	96	96	984
Fishing	42	42	42	42	42	42	42	42	42	42	42	462
Arctic	-	-	-	60	120	120	180	180	180	180	180	1200
Coast Guard	80	80	155	125	90	75	-	-	160	195	35	995
Polar 8	-	200	500	700	500	300	-	-	-	-	-	2200
DFO	120	120	120	120	120	120	120	120	120	120	120	1320
Minesweepers	-	25	40	50	65	90	105	85	55	10	-	525
DND Aux. Vessels	-	-	24	48	72	90	90	90	90	72	60	636
Subtotal	**447**	**1077**	**1627**	**1566**	**1105**	**1145**	**1008**	**988**	**1118**	**877**	**533**	**11491**
Ship Repair	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	11000
Grand Total	**1447**	**2077**	**2627**	**2566**	**2105**	**2145**	**2008**	**1988**	**2118**	**1877**	**1533**	**22491**

FIGURE 2 Three Scenarios for Total New Construction and Ship Repair Employment (Person-Years)

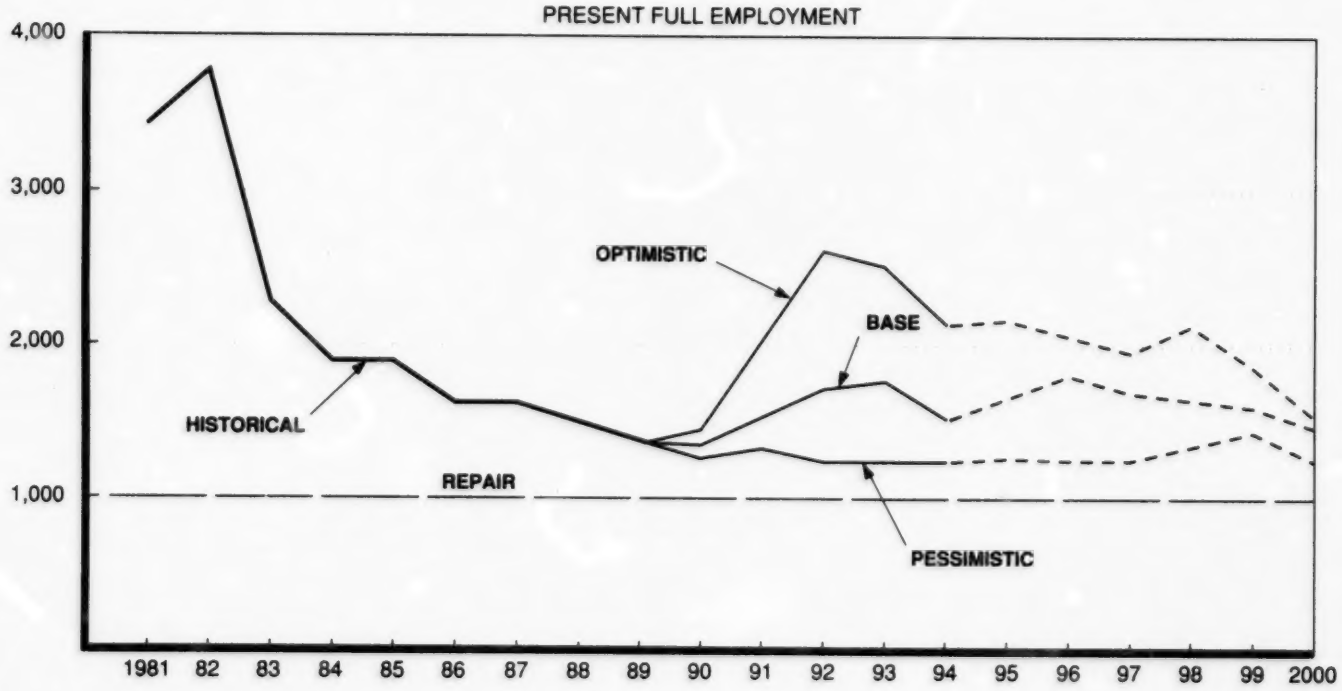
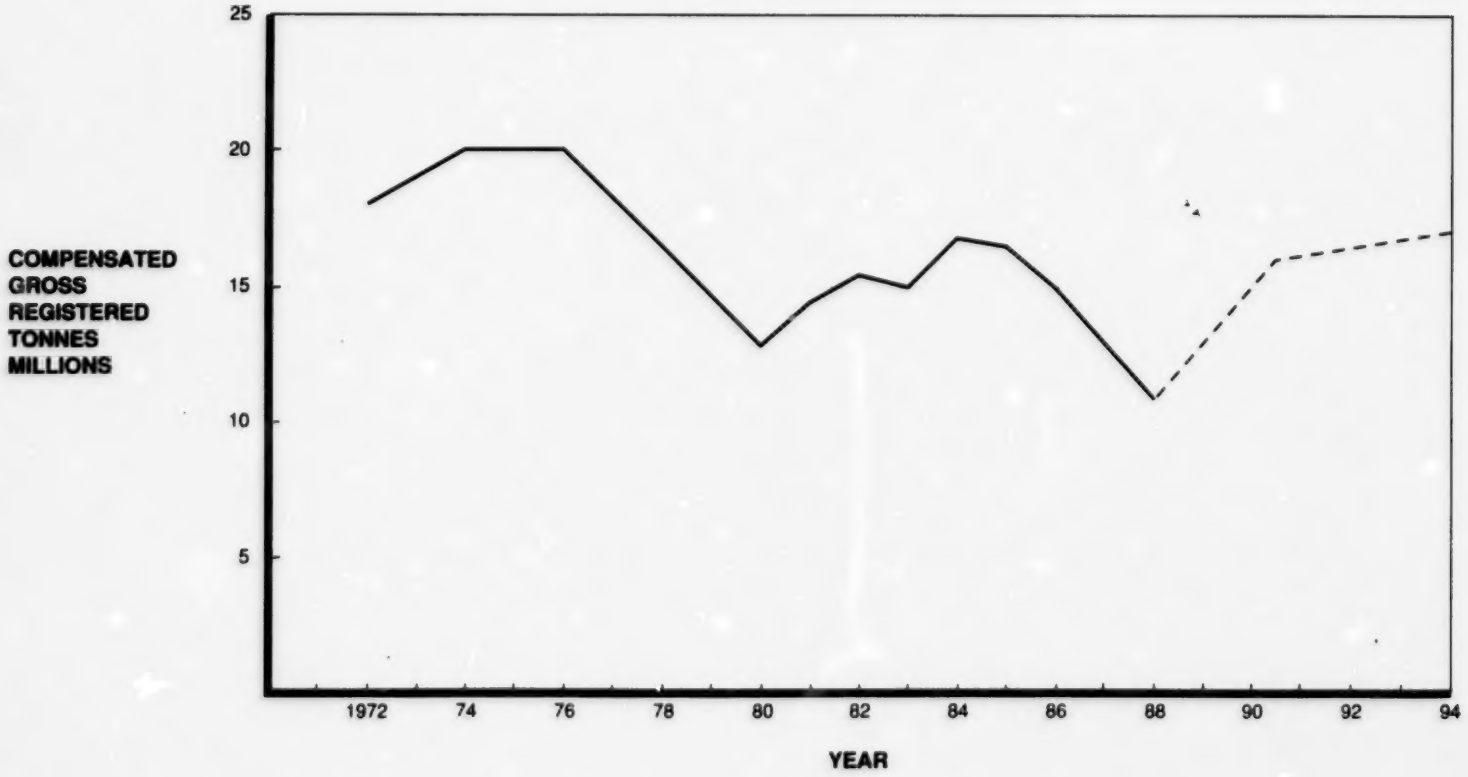


FIGURE 3 Forecast World Shipbuilding Demand



5.0 INDUSTRY PRODUCTIVITY

In addressing issues of productivity, various articles from the Journal of Ship Production have been reviewed.

5.1 The Productivity Challenge

It should be noted that for the type of new vessel construction typical of the British Columbia industry that, direct wages are about 25 percent of the total shipyard cost, outside materials are about 50 percent, and the remaining 25 percent is miscellaneous material and overhead. Therefore, a 10 percent improvement in productivity will provide the same saving as a 5 percent reduction in brought-in material.

The principal productivity problem in all manufacturing is to organize the work to be done in a way which permits the maximum utilization of the available time of workers and equipment. Systems innovation, or the notion of introducing new concepts for defining and ordering tasks, has been identified as the major cause for high shipyard productivity in Asia and some European yards versus North America. A modern shipyard is distinguished more by its use of organizational methods that enhance its capability to control the shipbuilding process than by its capital equipment. Traditional hull construction and outfitting called for design and construction of a ship one system at a time. Asian yards have modified the manufacturing operation by utilizing process lanes and zone outfitting.

5.1.1 Process Lane

A process lane is a series of fixed workstations provided with permanent services and appropriate tooling to produce a category of products (subassemblies) whose fabrication and assembly involve the application of a given sequence of production processes. The key to establishing a successful process lane is the use of group technology, that is, a method for classifying products into groups or families having design and manufacturing attributes which are sufficiently similar to make batch manufacturing practical. Avondale Shipyard, New Orleans, Louisiana, adopted process lanes for hull construction after a feasibility study estimated that implementation would lead to a 21 percent reduction in hull labour hours.

5.1.2 Zone Outfitting

Zone outfitting a vessel by region or zone rather than by functional system is also an important innovation. Modern yards attempt to do all their outfitting work before completion of the hull by the systematic assembly of outfit material into large units which can be installed whole on the hull blocks. The second dimension in zone outfitting is "stage", which is the practice of assembling outfit material into units prior to installation on the hull block, and extends outfitting into three stages: structure (meaning on the completed block), on-block (meaning on the hull blocks), and on-unit (meaning outfit assembly not involving any hull structure).

Japanese yards have estimated that on-block outfitting saves 30 percent compared with on-board outfitting and on-unit was estimated to save 70 percent compared with on-board outfitting. In some cases vessel delivery time can be cut in half.

5.1.3 Statistical Process Control

Statistical process control is the next step in the evolution of shipbuilding and involves integration of hull construction, outfitting and painting. The hull is built up out of modules which are almost completely outfitted with the ship's systems. This effective integration is dependent on the application of analytical management techniques, particularly the use of statistical analysis to control the manufacturing process. Such methods improve the ability of shipyard managers to solve problems by controlling the process.

5.1.4 Automation and Technology

Automation and technology systems innovation appears to be the key to greater shipyard productivity, however certain automation techniques are worth noting. CAD/CAM technology, when integrated with modern shipbuilding methods, can result in significant productivity improvements.

5.2 The Obstacles to Change

The real productivity challenge facing our shipbuilders is not that they are failing absolutely to improve, but that they started late and may be moving slowly. Factors associated with all inputs — management, labour, capital, as well as market demand — are probably all inhibiting productivity improvements.

5.2.1 Management

Implementation of new shipbuilding technology involves extensive alterations in work organization and also in the need for more and better managers. The attitudes and the educational experience of managers is important. It is not simply pride in craft that makes it difficult to introduce new methods, but a basic unfamiliarity with principles and concepts of manufacturing. The Japanese shipbuilder brings 10 to 12 years experience in all aspects of shipbuilding applying group technologies, statistical analysis and other modern practices. Our shipyard managers must also learn to utilize participatory management in implementing modern shipbuilding methods.

5.2.2 Labour

Critical to the implementation of the systems innovations is a skilled and motivated workforce. The skill of British Columbia labour is almost certainly not part of the productivity problem. Our workers are as skilled as their Japanese or Korean counterparts. However, the craft orientation of the unions is considered a major problem because it conflicts with the transition from systems oriented to zone oriented shipbuilding. Zone construction requires that workers be formed into flexible teams that must perform all different kinds of work. Workers must be trained to do multiple jobs or to have some basic skills in addition to their main expertise. The craft form of organization is incompatible with the new system of shipbuilding and the craft orientation of shipyards is considered prejudicial to its implementation.

5.2.3 Design Organization

Productive shipyards have succeeded in getting their production workers highly involved in design matters, starting with development of contract design. Most Asian yards build mainly from their own designs, which permits application of the most efficient fabrication, assembly and outfitting approach in ship design. Whether the contract design is prepared by an in-house design team or by independent naval architects, the shipyard must have a build strategy that begins with and includes design and it must be prepared to communicate this strategy to the ship owner.

5.2.4 Capital Investment

Of all the changes required to implement modern shipbuilding technology, investment in new facilities is definitely of secondary importance. In general, the capital investments needed to bring our shipyards' productivity to world standards is probably comparatively modest.

5.3 Technological Change — A Comparative Study

The U.S. Maritime Administration commissioned the University of Michigan to undertake a comparative productivity study between U.S. and Japanese shipyards (1980-83). The study compared the construction planning and manpower schedules for production of similar vessels at Avondale Shipyards (New Orleans) and Kawasaki Shipyards (Kobe). The study observed that:

- Travel distance for material at Avondale was six to 15 times greater than at Kawasaki;
- For process lane construction, Kawasaki divided the ship into 13 categories plus the super structure. Avondale had six construction categories. While Avondale made its divisions with the group technology concepts, Kawasaki made its division definitions with a strong geographic orientation;
- Avondale rarely subcontracted its labour activities, while Kawasaki subcontracted activities such as scaffold erection, tack-weld assembly, accommodation carpentry and joinery and insulation work;
- Total person-hours required for ship construction at Kawasaki were 39 percent to 44 per cent of that for Avondale;
- Avondale's strongest areas were piping fabrication and assembly whereas Kawasaki was strongest in design, engineering, planning and mold loft; and
- There was no significant difference in shipyard equipment. Both companies had sufficient equipment.

Avondale is probably one of the most productive U.S. shipyards and may now compare more favourably against Kawasaki than it did in 1983.

6.0 SUMMARY AND RECOMMENDATIONS

6.1 Background

Regional and Economic Development Minister Stanley B. Hagen challenged industry and labour to join government in developing a long term strategy to restructure the British Columbia shipbuilding industry. We have responded with the formation of the Shipbuilding Action Group and the formulation of the following recommended strategies.

This report addresses its recommendations to the four major issues facing the industry today, namely:

- Long-term competitiveness;
- Public sector procurement and operations;
- Trade related issues; and
- Industry cooperation, and market development.

BRITISH COLUMBIA

The British Columbia shipbuilding and ship repair industry has a much greater privately owned shipyard component than eastern Canada. In Quebec, New Brunswick, Nova Scotia, Prince Edward Island and Newfoundland, provincial governments either directly control, own shares or provide substantial support to their shipyards. We feel that this characteristic alone has required British Columbia shipbuilders to be more competitive, innovative and resourceful than yards in other regions. We do things differently in British Columbia. With the cancellation of Polar 8 and the subsequent formation of the Action Group we have learned to work more effectively as an industry.

WORLD MARKET

The world market is very competitive, it provides no room for compromise and it forces us to make hard decisions. The truth is that when faced with foreign government subsidies and low wage rate competitors, we cannot compete in shipbuilding except in ship repair and in specialty ship construction for Canadian service. In this environment, public sector procurement, both new building and repairs, is important: it can help provide some stability in an otherwise cyclical industry and thus provide reasonable job security for employees and a reasonable return on investment for owners; and it can generate sufficient cash flow to permit reinvestment in plants and equipment which will allow shipyards to keep up with rapidly changing technology.

THE FUTURE

We feel that if we make the sacrifices described in these recommendations, the industry will survive. It will require giving up jobs, closing yards, restructuring unions and improving government procurement procedures. Collectively we are prepared to make a realistic commitment to this industry, a commitment that will reflect fair and equitable treatment for all parties, individual yards, workers and fleet owners.

We have accepted the government challenge to revitalize the industry and now we need their support to fulfill our recommended strategies.

POLAR 8

The Polar 8 would not only have met our responsibilities in the Arctic as a sovereign nation, but the capital injection from the project would have been invested in technological change. The damage was to our futur, not a payment to our past.

The complexity, difficulty and cost of estimating, tendering and attempting to construct the Polar 8 icebreaker illustrates the problems that can arise when negotiating a large government project which is subject to political and fiscal uncertainties. With the cancellation of the Polar 8 icebreaker, the largest yard in British Columbia, Versatile Pacific Shipyards Inc. (the prime contractor for the project) is in a long term overcapacity situation. Vancouver Shipyards Co. Ltd., although not involved in the initial Polar 8 contract, was anticipating spinoff work and is now in an overcapacity situation as well.

WORKFORCE

Currently, the industry has a theoretical capacity of approximately 4000 persons. However, given the projected market activity in the region, this level is unlikely to be reached again in the next decade. Accordingly, the principal shipyards have permanently laid off over 2000 employees from the peak year of 1982. As a result of these changes, the existing employment level in the industry is in the range of 1500 persons at the major yards, with another 350 workers on short term layoff.

THE INDUSTRY

Currently, there are four major activities undertaken by British Columbia shipyards, namely shipbuilding, ship conversions, ship refits, and ship repair.

As previously outlined, the British Columbia industry is comprised of 11 major shipyards which account for about 95 percent of the shipbuilding and ship repair capacity in the province. Of these shipyards, Versatile Pacific Shipyards Inc. and Vancouver Shipyards Co. Ltd. are the principal large vessel shipyards. In addition, capability exists at Allied Shipbuilders Ltd., Vito Steel Boat and Barge Construction Ltd., and West Coast Manly Shipyard to build large vessels. The remaining yards focus on small vessel new construction and on repair and refit work. (As a general observation, this business is sufficient to keep these yards competitive and profitable.)

KEY QUESTIONS

Without some substantial shipbuilding projects, how long can ship repair, let alone the shipbuilding industry, survive? Without significant ship construction projects, skill levels diminish, and technology and process changes will pass us by.

6.2 RECOMMENDATIONS

NOTE: BOTH THE FEDERAL AND THE PROVINCIAL GOVERNMENTS MUST BE EXTREMELY CAREFUL AND PROCEED WITH A COHERENT AND COORDINATED PLAN TO ENSURE THAT BY HELPING ONE COMPANY THE ASSISTANCE DOES NOT ADVERSELY AFFECT OTHERS.

From shipbuilding trends confirmed by industry, government and independent consultants, it is evident that a permanent downsizing is fundamental to the future success of the industry. However, the British Columbia Ferry Corporation new build program, the requirement for Arctic vessels, the vessel requirements for Department of Fisheries and Oceans, and the vessel replacement needs for the tug and barge industry, point to a moderately better industry utilization than the present day workload. These combined opportunities will help in the establishment of long term work and a stable industry.

In view of these factors, we have concluded that industry capacity should be approximately 1800 person years, which is a level we believe is sustainable in the long term and reflects the base case scenario outlined in Section 4 of this report. Both levels of government should note the dramatic adjustment proposed in the report. There are real people with real jobs who are leaving, or have left, the industry in an attempt at permanently restructuring. Plant capacity must be permanently reduced if the industry is to survive.

6.2.1 Federal Government Initiatives

In order to restructure a viable shipbuilding and ship repair industry as reflected in the base case outlined in Section 4 of this report, we recommend to the federal government:

RECOMMENDATION 1

That Industry, Science and Technology Canada implement a shipyard assistance program, similar to that previously offered to Ontario and Quebec, that would be available to all British Columbia shipyards to:

- **Assist shipyards to permanently eliminate excess plant capacity;**
- **Assist shipyards to improve their competitive position relative to off shore yards;**
- **Assist shipyards and their workers to increase productivity and to adopt modern shipbuilding processes and technology; and**
- **Assist the industry to establish the British Columbia Marine Industries Council (reference recommendation 15).**

All applications for capacity elimination must also include a displaced workers' benefit package. All applications for improving competitiveness and productivity must also include an assessment of how the project would affect other firms in the industry.

To ensure a level playing field for all companies, all requests for assistance for either reducing capacity or increasing productivity must be submitted by October 1, 1990.

Agreement for assistance would be in place, at least in principle, by December 3, 1990.

RECOMMENDATION 2

That Western Diversification funds must be used to assist those firms who wish to move away from shipbuilding and ship repair into other related industries.

RECOMMENDATION 3

That Labour Canada assist older shipyard workers to take early retirement by using the Program for Older Worker Adjustment (POWA) and other relevant programs.

Government marine procurement has become an important component of the British Columbia shipbuilding industry, although western yards are generally less dependent on it than eastern Canadian yards.
In the past, both civilian and military procurement guidelines have comparatively disadvantaged British Columbia yards. This is particularly true in the Department of Supply and Services refit and repair guidelines that prohibit British Columbia yards from bidding on major refit contracts on eastern based vessels.

To level the procurement playing field, ensure fair access to federal bid processes and sustain the capacity levels outlined in the base case of this report, we recommend:

RECOMMENDATION 4

That the federal government:

- **change Department of Supply and Services policy guidelines toensure that all major conversion and refit work on the seven large Coast Guard icebreakers is open to national tender, acknowledging that additional bidder costs will be incurred for repositioning vessels to the West Coast (currently this work is restricted to Ontario, Quebec and Atlantic Canada yards);**
- **open all major conversions and refits to national competitive bids;**
- **ensure that the HMCS *Provider*, presently scheduled for in-house refit, be contracted out;**
- **ensure that the planned construction of the Northumberland Ferry by the Ministry of Transport (Canada) be open to national bid, rather than restricted to eastern yards;**
- **accelerate construction plans for new Department of Fisheries and Oceans vessels (with special emphasis on the FARV "A" research vessel and the Class II science vessel);**
- **ensure that British Columbia shipbuilders obtain an appropriate share of**

directed Major Crown Projects in the marine industry, including the construction of at least six of the Navy's 12 Maritime Coastal Defence Vessels;

- **ensure that Ship Repair Unit Pacific is strictly limited to maintaining combatant vessels; and**
- **ensure that Coast Guard Victoria, DFO Patricia Bay and DFO Prince Rupert Bases are limited to undertaking running repairs on their vessels.**

To maintain equitable access to the Esquimalt Graving Dock, we recommend:

RECOMMENDATION 5

That Public Works Canada acknowledge the importance of the Esquimalt Graving Dock to many private sector shipyards and their customers, and cancel any plans for privatization of the facility.

Under the terms of the Free Trade Agreement (FTA), Canada and the United States have agreed to eliminate tariffs on the repair and maintenance of vessels. The 50 percent U.S. tariff and the 25 percent Canada tariff are being removed over a 10 year period, starting in 1989. This should lead to opportunities for British Columbia yards to perform more repair and maintenance work on U.S. vessels.
However, the FTA provides for the elimination, over 10 years, of the 25 percent Canadian tariff on vessels imported from the U.S. But, U.S. legislation which prohibits the importation of vessels (i.e. the *Jones Act*) is exempt from the FTA. The FTA does allow Canada to respond by putting quantitative restrictions on the import of U.S. vessels. There is concern that Canada must closely monitor this aspect of Canada-U.S. trade. We recommend:

RECOMMENDATION 6

That Canada closely monitor the relevant aspects of the FTA to ensure that the U.S. prohibition does not put British Columbia yards at an unfair disadvantage.

With respect to tariff elimination under the FTA, we recommend:

RECOMMENDATION 7

That Canada make application for accelerated elimination of the tariffs on the repair and maintenance of vessels.

In order to protect our industry from the very substantial shipbuilding subsidies provided by most foreign governments, we recommend:

RECOMMENDATION 8

> **That Canada maintain 25 percent tariff protection, where currently applicable, and expand protection to include fishing vessels over 100 feet.**

With respect to other trade related issues, we also recommend:

RECOMMENDATION 9

> **That vessel compliance regulations not be waived on foreign built vessels, thus ensuring that foreign vessels are not favoured over Canadian built vessels.**

We have left discussion of and recommendations concerning the Polar 8 until the end of this section dealing with the federal government. The cancellation of Polar 8 was calamitous for the British Columbia shipbuilding industry and that was clearly the catalyst that caused the formation of the Action Group. Several conclusions are evident from the decision to cancel the Polar 8:

- the Polar 8 on its own would not have preserved the industry at employment levels of the early 1980s. However, the Polar 8, at a cost of $400 million, would have provided the needed capital injection to aid in restructuring and in promoting technological upgrading;
- the Polar 8 would have been the only Major Capital Project on the west coast in contrast to the Canadian Patrol Frigate ($8.0 billion, 1983-97) and the TRUMP ($1.2 billion, 1986-92) programs which were Major Capital Projects directed to New Brunswick and Quebec yards;
- when the Action Group met with federal Ministers on March 13, 1990, the Ministers appeared unaware of the cost cutting measures proposed by VPSI to bring the Polar 8 in on budget;
- it is clear that the ship standards developed met the Coast Guard mission statement for the vessel but were also far in excess of commercial ship standards and may have exceeded the standards proposed by the Bruneau Commission; and
- the bidding process for federal government procurement in this area, from a ship builder's perspective, is cumbersome and unwieldy. This can result in additional costs not only to the shipbuilders but also to the federal government.

Therefore we recommend:

RECOMMENDATION 10

> **That the federal government reconsider the Polar 8 decision in light of current discussions concerning Coast Guard icebreaker requirements. (If this reconsideration occurs, the structural adjustment argued in the base case of this report can be adjusted to relieve the immediate pressure to lay off 350 workers).**

That the federal government design a program of assistance to stimulate the development of new commercial vessels for Arctic and other uses.

That the federal government appoint, within 60 days, an independent panel with representation from government and industry to review the federal marine procurement system and to recommend ways of streamlining the federal procurement process. The panel would report its findings within 180 days of being appointed.

That the federal government appoint, within 60 days, an independent panel, also with government and industry representation, to review Canadian commercial ship standards to ensure consistency with world wide commercial ship standards. The panel would report its findings within 180 days of being appointed.

Federal government responsibilities for responding to the recommendations are covered by Industry, Science and Technology Canada, Department of Supply and Services, Department of National Defence, Department of Fisheries and Oceans, Transport Canada/Coast Guard, Western Diversification Office, Labour Canada and the Department of External Affairs. In order to ensure a coordinated federal response we recommend:

RECOMMENDATION 11

That the Honourable Kim Campbell, Minister of Justice (lead British Columbia Minister), in consultation with the Honourable Benoit Bouchard, Minister of Industry, Science and Technology (lead line Minister) and the Honourable Mary Collins, Associate Minister of Defence (long-standing interest in this sector) ensure a coordinated federal response to the Action Group's recommendations and facilitate communication between the proposed industry council and the federal government.

6.2.2 Provincial Government Initiatives

In order to build a restructured viable industry as described in the base case in this report, we recommend that the provincial government ensure:

RECOMMENDATION 12

That all British Columbia Ferry Corporation new construction, conversion, major repair work, pre-purchased components for new vessels and technical services be offered for fair competitive bid, with preferential consideration given to the industrial and employment benefits available from sourcing in British Columbia.

That the British Columbia Ferry Corporation Deas Dock facility be limited to undertaking running repairs on BCFC vessels.

That the British Columbia Ferry Corporation, in conjunction with the British Columbia Marine Industries Council, proposed here (reference recommendation 15), review procurement policy to ensure that all British Columbia Ferry Corporation procurement procedures are open and effective.

RECOMMENDATION 13

That the Ministry of Regional and Economic Development continue to assist industry, labour and ISTC in dealing with issues arising from industry rationalization.

That MRED work with the industry and the federal government on the proposed program of assistance to stimulate the development of new commercial vessels for Arctic and other uses.

That MRED work with WDO on shipbuilding industry diversification issues.

That MRED assist the industry to establish the British Columbia Council of Marine Industries (reference recommendation 15).

That the Ministry of Advanced Education, Training and Technology (AETT) work with Labour Canada on assisting older shipyard workers to take early retirement.

Provincial government responsibilities for responding to the recommendations are covered by the Ministry of Regional and Economic Development, British Columbia Ferry Corporation, the Ministry of Transportation and Highways, the Ministry of International Business and Immigration, and the Ministry of Advanced Education, Training and Technology. In order to ensure a coordinated provincial government response we recommend:

RECOMMENDATION 14

That the Honourable Stanley B. Hagen, Minister of Regional and Economic Development, in consultation with the Honourable Rita Johnston, Minister of Transportation and Highways, and Honourable Bruce Strachan, Minister of Advanced Education, Training and Technology, coordinate the provincial response to the Action Group recommendations and facilitate communication between the proposed industry council and the provincial government.

6.2.3 Industry and Labour Initiatives

Increasing global competition and declining levels of federal procurement will challenge the British Columbia shipbuilding industry in the future. To mitigate these problems will require increasing cooperation and communication within the industry. Additionally, ongoing economic strength will depend on improved research to identify new market opportunities, greater intra-industry cooperation for joint project undertakings, increased industry promotion directed toward important clients, and risk reduction through identification of diversification opportunities and consortium bidding.

To achieve these goals and to help ensure that the base case levels of employment are achieved, we recommend:

RECOMMENDATION 15

That a British Columbia Council of Marine Industries be established for the purpose of promoting industry objectives by:

- **improving communication within the industry and with government, clients and other related industries and associations;**
- **identifying and making recommendations for methods to resolve issues and problems common to the British Columbia shipbuilding industry;**
- **undertaking market research and other special projects, including the identification of potential niche markets, in support of the British Columbia shipbuilding industry;**
- **acting as a lobby for industry interests on issues such as tariff protection, regulations and taxation;**
- **undertaking joint marketing initiatives on behalf of the industry;**
- **liaising with major fleet owners; and**
- **developing a business plan reflecting the above objectives.**

Council membership would consist of all shipyards, all shipyard unions and representation from allied industries.

RECOMMENDATION 16

That existing seniority lists be recognized and combined, within individual unions where union trades are complementary.

That collective agreements allow for implementation of technological changes reflecting modern shipbuilding and ship repair manufacturing and control processes.

That a Federation of British Columbia Shipyard Unions be established to form consistent policy across the industry with respect to productivity, technological change and other issues. The Federation will set its own bylaws.

In order to build a restructured viable and stable industry, a renewed spirit of compromise and commitment must be forged between government, industry and labour.

Detailed negotiations between all interested and affected parties must occur. Hard decisions must be taken and a working framework for action agreed upon.

Therefore, we recommend:

RECOMMENDATION 17

That within 30 days federal Cabinet Ministers Campbell, Bouchard and Collins accept recommendation 11, and provincial Cabinet Ministers Hagen, Johnston and Strachan accept recommendation 14.

That by December 3, 1990, each commit in the following way:

- **the federal government accept and begin implementation of recommendations one through ten concerning industry assistance, public sector procurement, the Esquimalt Graving Dock, trade related issues and the Polar 8;**
- **the provincial government accept and begin implementation of recommendations 12 and 13 concerning BCFC and assisting industry in dealing with the ISTC, WDO and Labour Canada assistance programs;**
- **the industry submit its proposals for restructuring, productivity improvements and diversification to ISTC and to WDO and for worker assistance to Labour Canada;**
- **the British Columbia Marine Industries Council be formed; and**
- **the shipyard unions restructure their umbrella organization and be prepared to meet with employers to discuss requisite changes.**

On December 3, 1990, the Action Group will meet again to review progress and hand over outstanding issues to the Council.

NOTE: BOTH THE FEDERAL AND THE PROVINCIAL GOVERNMENTS MUST BE EXTREMELY CAREFUL AND PROCEED WITH A COHERENT AND COORDINATED PLAN TO ENSURE THAT BY HELPING ONE COMPANY THE ASSISTANCE DOES NOT ADVERSELY AFFECT OTHERS.

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